

**Title**

Policies and incentives to RDI: the Brazilian experience

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## Extended paper abstract

### 1. Introduction

This paper discusses the application of resources to encourage the activities of RDI (Research, Development and Innovation) in Brazil over last decade. These resources are one of the key elements included in the STI policy reform carried out in the country between 1999 and 2002. Specifically, it seeks to determine the effectiveness on the allocation of resources from the *sectoral funds* made by FINEP, through the main support instruments existing in the Brazilian system, namely: credit, cooperative projects and subvention. With this analysis we want to contribute to the discussion on the adequacy of existing instruments and their contribution to the achievement of policy goals.

After two decades of crisis, the nineties represented a transition period for the Brazilian economy. This new context opened space for restructuring national public policies, including the science, technology and innovation policy (STI), which was strongly influenced by the discourse of the OECD and the practices of some of its member countries, while were necessary adaptations to national particularities.

The Brazilian STI policy reform had two core elements. The first one was the proposal to extend and updating the legal framework intended to stimulate technological innovation, and the latter, the expansion and stabilization of funding sources for public actions on STI.

In the field of resource generation, the most important measure was the creation of the so-called sectorial funds, which would become the main source of funding for the Brazilian Federal Government to encourage STI (Science, Technology and Innovation). Through them it was possible to grant funds to private firms and Science and Technology Institutions by means of a set of financing instruments for RDI, managed by FINEP –Innovation Agency of the Brazilian Ministry of Science, Technology and Innovation (MCTI)–, and by CNPq (National Council of Technological and Scientific Development).

The financing instruments currently available offer refundable resources through credit –already granted before the reform–, and non- refundable resources through cooperative projects, subvention and venture capital, all of them made viable due to the institutionalization of the new sources during the policy reform. Its main purposes were to encourage cooperation between the actors of the National System of Innovation and the business RDI performance.

While in the past decade indicators such as private sector participation in national R&D expenditure (47.3% of total expenditures in 2010) and the rate of industrial innovation (38.1% in 2008) have improved, other indicators, like the performance of internal R&D and other innovation activities by the private firms, have declined. Overall, the evolution of the indicators has been slow, with results lower than expected.

## 2. Methodology

The analysis in this paper focuses on just one aspect of STI public policy in Brazil, such as the promotion of RDI activities. Still, it contributes to the discussion on policy instruments and actions required in developing countries and to the Brazilian public sector accountability.

As a starting point the paper reviews previous studies on STI Brazilian politics –and specifically on the promotion of RDI– made by local authors, who offer a policy analysis from a systemic perspective, although focused on different elements.

One of those elements refers to the process of STI reform carried out in the country between 1999 and 2002, which was based on the diagnosis of the National Science and Technology System<sup>1</sup>. To address the major challenges identified, the policy was built around two main elements: the expansion and updating of the legal framework intended to encourage technological innovation and the expansion and stabilization of funding sources for public actions on STI.

The funding sources and instruments are discussed by Corder (2004), Guimarães (2006) and, among others, Hollanda (2010), the latter with a particular emphasis on the incentives to industrial innovation. Having this works and the publications of the federal government as reference, the paper focuses on the sectorial funds and the main instruments that allocate their resources: credit, cooperative projects and subvention, highlighting their objectives and how they have been operationalized.

The numbers on resource allocation are obtained through a review of reports from official agencies and the previous work of Vélez (2011) e Corder et al. (2012). They indicate in details the evolution of Governmental expenditures between 1999 and 2012, the number of projects, actors (firms and institutions) that have been benefited and the sectors of the economy, Such information is interpreted in the light of the policy objectives and the governance and management of the instruments, together with the evolution of national indicators of PDI.

## 3. Results

Preliminary analysis on the evolution of resources availability for STI reveals a substantial growth and particularly, the strategic role that the sectorial funds had to recover spending capacity of the MCTI. However, its creation was not enough to raise significantly the level of resources of the National Fund for Science and Technology Development –where the sectorial funds are allocated–, compared to levels prevailing before the STI policy reform. Still, the funds are a leading source of resources from MCTI to finance their regular actions, including those that are not directly related to the objectives and initial justification that supported the creation of funds.

Because of its non-refundable character, the sectorial funds have failed to finance innovation, as originally planned. Besides, available resources to their operations have experienced strong fluctuations arising from the contingency actions of the fiscal policy

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<sup>1</sup> The main problem identified was the remarkable superiority of academic and scientific indicators over technology development indicators, especially those related to R&D, imbalance that would have been caused by the lack of coordination between the scientific and the production structure that had been formed in the country (PACHECO, 2003, 2007; CORDER, 2004).

in force<sup>2</sup>. This fluctuation is obviously inconsistent with the nature of the operations financed by the funds, most of them with medium and long-term maturity and whose results are sensitive to the coming and going of resource availability.

Credit is revealed as the instrument through which Finep allocates the highest amount of public resources, with the large companies as the main recipient since they offer better guarantees and therefore, represent lower risk in the loan portfolio of the entity<sup>3</sup>. Those same companies are the ones that show a higher rate of innovation according to the results of the National Technological Innovation Survey –PINTEC (IBGE – Brazilian Institute of Geography and Statistics), held biannually in the country.

The non-refundable instruments became policy oriented to smaller companies. Among them, cooperative projects were consolidated as one of the main funding alternatives for universities and research centres, which have remained, even after the reform, as the major executors of R&D activities in the country. Thus, the gap between scientific production indicators and those of technological innovation shows no sign of diminishing.

The subvention started operating at 2006. Between 2006-2009, 500 companies have been benefited through annual open calls, mostly small and microenterprises (FINEP, 2010). It is about a high number of low-value projects that are too small and not able to change or make any difference, especially in the area of innovation.

While the availability of resources has been growing from 2002, the rate of industrial innovation has increased poorly in last years. The problem is that in Brazil the rate of business R&D is very low, and besides, the amount of money for subvention projects is very low as well. Actually, the main source of innovation in Brazilian industrial companies has been the acquisition of machinery and equipment, according PINTEC, (IBGE). Despite efforts, the money allocated for RDI activities did not respond to incentives as expected, showing the complexity of the issue. There are structural and cyclical determinants that explain the problem, some of which are related to the subject of this paper, for instance: emphasis on incremental and process innovation –instead of product innovation; legal difficulties faced by the government to allocate grants for innovative projects; difficulties in agreements between actors due to rigidities on the protection of property rights; ways and means for allocation of resources that do not break the cultural barriers in the short term; fluctuation on the availability of resources due to the confiscate actions.

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<sup>2</sup> The contingency of resources is blocks the use of funds approved in the Annual Budget Law (LOA). In 2002 the MCTI forbade the confiscation of resources devoted to S&T through Decrees of Budget and Financial Scheduling and through the Budget Guidelines Law. However, to obtain the necessary surpluses in meeting fiscal targets, it was set the contingency in advance of those resources through the Contingency Reserve Program.

<sup>3</sup> Should be noted that the resources sector funds for credit are those that reduce interest rates. The amount to finance the principal is refundable and comes from another source.

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